

Choosing sustainable materials

In this fact sheet:

- What are sustainable materials?
- Sustainable sourcing
- Assessment sheets for sustainable building materials

Whether you are renovating or building, it's a good idea to think about more than just the cost of the materials you use. Think about choosing materials that will be healthy to live with and which will be durable into the future. Also consider materials which will have less impact on the environment.

More sustainable products and materials often cost no more than less sustainable options and the benefits are more than just financial. For example, using low VOC paints benefits the health of both the painter and the home occupant and using high quality products and materials reduces the frustration of replacing poorly made 'disposable' products.

Buying products locally supports local economies, and buying sustainable products supports businesses that make an effort to produce sustainably.

What are sustainable materials?

Materials which:

- promote good indoor air quality
- have minimal health risks during construction or renovation
- are durable and have low maintenance requirements
- incorporate recycled content or can readily be recycled
- reuse existing or demolished building materials or can readily be reused
- are made from renewable or sustainably managed resources
- have low embodied energy including minimal impacts due to transport choices
- have low impact on landfill or are biodegradable
- have third-party certification (e.g. NZ Environmental Choice, Forest Stewardship Council)

Tips box

- Use materials which suit the local climate and heritage of the neighbourhood/site, and which support local industry employment.
- Choose materials which are suitable for the task and which are durable. Constantly replacing poor quality or inappropriate materials is a waste of resources.
- Minimise the use of materials. Make sure you have sufficient material for the task, but try to avoid over-ordering materials and excessive wastage. Try to reuse or recycle materials where you can.
- Choose materials carefully. It's really just a matter of getting information before making product and material choice decisions. Find out about the source of the material, where and how it was made. Product descriptions often include information about VOC levels and supply chain. Read ingredient lists to check for aromatic compounds. Look for environmental or energy labels such as the Environmental Choice NZ label or FSC (Forest Stewardship Council).

Sustainable sourcing

- You can make a difference to our environment by specifying environmentally sustainable materials. Labelling systems help you to choose sustainable products. They will verify that: The material is produced at a rate that allows regeneration of the resource, so the resource isn't exhausted and is still available for future generations.
- The material has low life-cycle effects. The 'life cycle' includes obtaining the raw materials, manufacturing the product, transporting it to the building site, using the material in the building, and disposing of the material or reusing or recycling it when the building has reached the end of its life. Environmental impacts include: emitting pollutants into the water, air and land; using up valuable resources such as water and old-growth timber; and changing land use such as forest clearance which can lead to loss of biodiversity.
- The material has low 'embodied energy' i.e. the energy used throughout its life cycle. Minimising embodied energy is important as it means that resources have been used efficiently, new energy generation infrastructure is delayed, and fewer greenhouse gases are emitted.

When looking at environmental labelling, a key concern is that product claims are independently verified (labelled) – anyone can say their product is good, but independent verification is the only way you know those claims are true.

A range of tools are available for undertaking detailed assessments of the sustainability of products and materials.

Tips box

For more detail of particular products, you can go to one of the sites which contain independent, third-party certification:

- In NZ, Enviro-Choice, www.enviro-choice.org.nz/, is the gold standard, recognised nationally and internationally as one of the best.
- The industry site Greenbuild went into receivership in its infancy but has some information: www.greenbuild.co.nz/. It contains a few independent certifications.
- The MED has a list of Ecolabels: www.med.govt.nz/templates/ContentTopicSummary_37890.aspx
- The NZ Institute of Architects has a comprehensive set of Life Cycle Assessments of various systems and materials, not available online. I have a copy.
- A NZ site with credibility (though not officially recognised) is www.ecoprojects.co.nz/Site/Publications/eco_directory.aspx.
- Greenlist is user-friendly and purports to contain various certifications, but most are self-rated and few are independent. E.g. the "Made-in -NZ" logo is treated as a certification. www.greenlist.co.nz/Category/Building-And-Maintenance.aspx?page=4

Overseas robust sites include

- Australia: Eco-Specifier www.ecospecifier.org/
- UK: Greenspec www.greenspec.co.uk/index.html

Assessment sheets for 'eco' building materials

Sometimes it's hard to know just how 'eco' a product is and which materials are best. Often we have to rely on the manufacturer's information, which can be biased and incomplete.

However, there are some commonsense criteria. The following checklist on contains the most important, and if you fill it out for the materials you are considering, it will help with your decisions. Photocopy the list (use recycled paper) and fill it out for every material. Everything being equal, the more 'Yes' ticks, the more 'eco' your product.

Of course this method is simplified and you should also consider any other criteria you are concerned about. There are endless things to take into account, such as embodied energy, water use, resource depletion and environmental standards in the country of origin.

When two materials you are evaluating have the same score, you could do some more research to help your decision. But often the choice is not easy, there are no clear answers, and you need to make the choice you are most comfortable with.

One conflict that often occurs is the choice between a local material and a material from Europe or America that is more environmentally friendly. The local material is not transported as far, supports the local economy, and often it is cheaper and it is easier to obtain information about it.

However the first question you should ask yourself is: 'Will this material do the job I want it to do?' It makes no sense to choose a material just because it is environmentally friendly, when it will not perform. This means that it will have to be replaced in the future, using up more valuable resources.

General Sustainable Materials Checklist

Does this material come from a renewable resource? Yes No

Renewable resources are things that regenerate, such as properly managed timber, cork or bamboo. An example of a non-renewable resource is fossil fuels or products derived from it, such as plastics.

Was the material made or grown locally? Yes No

Locally made products require less transport and therefore less energy and fossil fuel input. They also support our local economy.

Is the material durable and of high quality? Yes No

Durable materials don't need to be replaced as often, so resources are conserved.

Is the material safe (non-toxic)? Yes No

Some people argue that some materials might compromise your health, such as: formaldehyde, solvent-based paint and treated timber. Look for safer alternatives or minimise their use where practicable.

Is the production of the material safe/eco-friendly? Yes No

Avoid products that use large amounts of energy in production or cannot be recycled or reused at the end of their life. Minimise the use of products that include toxic components, such as treated timber. For some materials you also need to look at the extraction, such as for aggregates, or clay for bricks. You should also consider the health, safety and wellbeing of the production workers. Choose products that are made from recycled materials or reuse second-hand materials, such as old bricks or windows.

Is the disposal of the product safe? Yes No

Every material becomes waste one day. Avoid materials that will become hazardous waste. Choose materials which can be reused or recycled, or those which are biodegradable.

Wood Buying Checklist

Greenpeace New Zealand has a good wood guide, which is a list of outlets stocking environmentally friendly wood in New Zealand www.greenpeace.org.nz/campaigns/forests/goodwood.asp This can be used in conjunction with their 'Wood Buying Tree' to source your wood products:

Question 1: Is the wood recycled, reused or urban salvage?

Yes → USE

No → Go to Question 2

Question 2: Is the wood from a native forest or rainforest?

Yes → Go to Question 3

No → Go to Question 9

Question 3: Is it from a native forest source in New Zealand or Australia?

Yes → DO NOT USE

No → Go to Question 4

Question 4: Does it come from certified or verifiable Pacific community forestry?

Yes → USE

No → Go to Question 5

Question 5: Is it imported from certified secondary forests or semi-natural forests?

Yes → USE

No → Go to Question 6

Question 6: Is it from secondary forests verified as being a type that is not threatened, rare or endangered?

Yes → USE NON-PREFERENTIALLY

No → Go to Question 7

Question 7: Is it an imported wood from certified old growth/ancient forests?

Yes → USE NON-PREFERENTIALLY (except New Zealand – DO NOT USE)

No → Go to Question 8

Question 8: Is it from uncertified imported old growth/ancient forests/rainforests?

Yes → DO NOT USE

No → USE NON-PREFERENTIALLY

Question 9: Is it a certified plantation or farm/agro-forestry source?

Yes → Go to Question 10

No → Go to Question 11

Question 10: If it is timber and manufactured panels and boards, is it either untreated or uses non-toxic preservation treatment or glues?

Yes → USE

No → DO NOT USE

Question 11: Is the source moving towards certification and from re-forestation of agricultural land (not cleared of forest in last 10 years)?

Yes → USE

No → USE NON-PREFERENTIALLY

For more information:

- Level website section provides a good checklist of things to think about and fact sheets on a wide range of materials: www.level.org.nz/material-use/choosing-materials
- Smarter Homes website section on materials: www.smarterhomes.org.nz/materials/materials-overview/
- A good overview of this very complex topic is at www.waitakere.govt.nz/AbtCit/ec/bldsus/pdf/materials/bulidingmat.pdf.